THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method for the treatment of a lignin-containing material comprising contacting the lignin-containing material with an ionic liquid.

2. The method of claim 1, wherein lignin from the lignin-containing material is extracted into the ionic liquid, and the lignin is recovered from the ionic liquid.

3. The method of claim 2, wherein solids remaining after the lignin has been extracted into the ionic liquid are separated from the ionic liquid.

4. The method of any one of claims 1 to 3, wherein the lignin-containing material is contacted with a single species of ionic liquid.

5. The method of any one of claims 1 to 3, wherein the lignin-containing material is contacted with a mixture of different ionic liquid species.

6. The method of any one of claims 1 to 5, wherein the lignin-containing material is contacted with a combination of the ionic liquid and a cosolvent.

7. The method of claim 6, wherein the lignin-containing material is contacted with a combination of the ionic liquid and water.

8. The method of any one of claims 1 to 7, wherein the lignin-containing material is contacted with a solvent composition comprising between 50 and 100% of the ionic liquid.

9. The method of any one of claims 1 to 8, wherein the lignin-containing material is contacted with ionic liquid which comprises:

- an substituted or unsubstituted aryl organic acid anion; and
- an ionic liquid-forming inorganic cation or an organic cation.

10. The method of claim 9, wherein the anion component of the ionic liquid is a substituted or unsubstituted phenyl, naphthyl or pyridyl organic acid anion.

11. The method of claim 10, wherein the aryl is substituted by between 1 and 4 substituents independently selected from the group consisting of alkyl, alicyclyl, aryl, aralkyl, alkylaryl, heteroaryl, halogeno, hydroxy, nitro, haloaryl and sulfonate.

12. The method of any one of claims 9 to 11, wherein the organic acid anion is a sulfonate, sulfate, carboxylates, phosphinate or a phosphate.

13. The method of any one of claims 9 to 12, wherein the organic acid anion is a sulfonate.

14. The method of any one of claims 9 to 13, wherein the anion is a substituted or unsubstituted aryl disulfonate anion.

15. The method of any one of claims 9 to 14, wherein the cation of the ionic liquid is a substituted or unsubstituted imidazolium, triazolium, pyrazolium, pyridinium, pyrrolidinium, piperidinium, phosphonium equivalents of one of the preceding groups, an ammonium, phosphonium or sulfonium cation.

16. The method of claim 15, wherein the cation is substituted by one or more selected from the group consisting of aliphatic, alicyclyl, aryl, aralkyl, alkylaryl, heteroaryl, hydroxy, nitro and haloaryl.

17. The method of any one of claims 1 to 7, wherein the ionic liquid is a substituted or unsubstituted imidazolium, triazolium, pyrazolium, pyridinium, pyrrolidinium, piperidinium, ammonium, phosphonium or sulfonium salt of a substituted or unsubstituted aryl sulfonate.

18. The method of claim 1, wherein the lignin-containing material is contacted with a kraft alkali liquor in the presence with an ionic liquid additive.

19. The method of any one of claims 1 to 18, wherein the lignin-containing material is a ligno-cellulosic material.

20. The method of claim 19, wherein the lignin is selectively extracted into the ionic liquid, without significant degradation of the cellulose and hemicellulose of the ligno-cellulosic material.

21. The method of any one of claims 1 to 18, wherein the lignin-containing material is a plant or plant derivative material.

22. The method of any one of claims 1 to 21, wherein the lignin-containing material is selected from one or more of lignocellulostic residues of sugar, wheat, rice and corn or other biomass, agricultural grasses, woodchips, bamboo, as well as any materials proximately or ultimately derived from plants.

23. The method of any one of claims 1 to 22, comprising contacting the lignin-containing material with the ionic

liquid to extract lignin and optionally other chemicals into the liquid phase, and separating the liquid phase from remaining solids.

24. The method of claim 23, wherein the lignin-containing material is a lignocellulosic material, the remaining solids comprise cellulosic fibre.

25. The method of claim 23 or claim 24, wherein the lignin-containing material is contacted with the ionic liquid at an elevated temperature.

26. The method of claim 25, wherein the temperatures is between 50 and 200°C.

27. The method of claim 26, wherein the lignin-containing material is contacted with the ionic liquid at atmospheric pressure.

28. The method of any one of claims 23 to 27, wherein the time of contact is between 1 and 8 hours.

29. The method of any one of claims 23 to 28, comprising precipitation of lignin from the liquid phase after separation of the liquid phase from the remaining solids.

30. The method of claim 29, comprising recovering the precipitated lignin from the liquid phase.

31. The method of claim 30, comprising dewatering the diluted stream of ionic liquid, from which the precipitated lignin has been removed, to remove excess water therefrom.

32. The method of claim 31, comprising distilling the dewatered ionic liquid to remove other chemicals extracted from the lignin-containing materials therefrom.

33. The method of claim 32, comprising recycling the ionic liquid recovered following distillation for contacting with further lignin-containing material.

34. A product produced by the method of any one of claims 1 to 33.

35. Use of an ionic liquid in the treatment of a lignin-containing material.

36. Use of claim 35, wherein the ionic liquid comprises:
- an substituted or unsubstituted aryl organic acid anion; and
- an ionic liquid-forming inorganic cation or an organic cation.

37. Use of claim 36, wherein the anion component of the ionic liquid is a substituted or unsubstituted phenyl, naphthyl or pyridyl organic acid anion.

38. Use of claim 36, wherein the aryl is substituted by between 1 and 4 substituents independently selected from the group consisting of alkyl, alicyclyl, aryl, aralkyl, alkylaryl, heteroaryl, halogeno, hydroxy, nitro, haloaryl and sulfonate.

39. Use of any one of claims 35 to 38, wherein the organic acid anion is a sulfonate, sulfate, carboxylates, phosphinate or a phosphate.

40. Use of any one of claims 35 to 39, wherein the organic acid anion is a sulfonate.

41. Use of any one of claims 35 to 40, wherein the anion is a substituted or unsubstituted aryl disulfonate anion.

42. Use of any one of claims 35 to 41, wherein the cation of the ionic liquid is a substituted or unsubstituted imidazolium, triazolium, pyrazolium, pyridinium, pyrrolidinium, piperidinium, phosphonium equivalents of one of the preceding groups, an ammonium, phosphonium or sulfonium cation.

43. Use of claim 42, wherein the cation is substituted by one or more selected from the group consisting of aliphatic, alicyclyl, aryl, aralkyl, alkylaryl, heteroaryl, hydroxy, nitro and haloaryl.

44. Use of claim 43, wherein the ionic liquid is a substituted or unsubstituted imidazolium, triazolium, pyrazolium, pyridinium, pyrrolidinium, piperidinium, ammonium, phosphonium or sulfonium salt of a substituted or unsubstituted aryl sulfonate.

45. An ionic liquid comprising

- an substituted or unsubstituted aryl organic acid anion; and
- an ionic liquid-forming inorganic cation or an organic cation.

46. The ionic liquid of claim 45, wherein the anion component of the ionic liquid is a substituted or unsubstituted phenyl, naphthyl or pyridyl organic acid anion.

47. The ionic liquid of claim 45, wherein the aryl is substituted by between 1 and 4 substituents independently selected from the group consisting of alkyl, alicyclyl, aryl, aralkyl, alkylaryl, heteroaryl, halogeno, hydroxy, nitro, haloaryl and sulfonate.

48. The ionic liquid of any one of claims 45 to 47, wherein the organic acid anion is a sulfonate, sulfate, carboxylates, phosphinate or a phosphate.

49. The ionic liquid of any one of claims 45 to 48, wherein the organic acid anion is a sulfonate.

50. The ionic liquid of any one of claims 45 to 49, wherein the anion is a substituted or unsubstituted aryl disulfonate anion.

51. The ionic liquid of any one of claims 45 to 50, wherein the cation is a substituted or unsubstituted imidazolium, triazolium, pyrazolium, pyridinium, pyrrolidinium, piperidinium, phosphonium equivalents of one of the preceding groups, an ammonium, phosphonium or sulfonium cation.

52. The ionic liquid of claim 51, wherein the cation is substituted by one or more selected from the group consisting of aliphatic, alicyclyl, aryl, aralkyl, alkylaryl, heteroaryl, hydroxy, nitro and haloaryl.

53. An ionic liquid comprising a substituted or unsubstituted imidazolium, triazolium, pyrazolium, pyridinium, pyrrolidinium, piperidinium, ammonium, phosphonium or sulfonium salt of a substituted or unsubstituted aryl sulfonate.

54. The ionic liquid of claim 53, wherein the substituted or unsubstituted aryl sufonate is a substituted or unsubstituted phenyl, napthyl or pyridyl sulfonate.

55. The ionic liquid of claim 53 or claim 54, wherein the substituents of the aryl sulfonate component are selected from the group consisting of aliphatic, alicyclyl, aryl,

aralkyl, alkylaryl, heteroaryl, hydroxy, nitro and haloaryl.

56. Use of the ionic liquid of any one of claims 45 to 55 in the treatment of a natural material.

57. Use of claim 56, wherein the natural material is a plant materials and plant-derived materials.